A Case Study on the Perceptions of Educators on the Penetration of Personal Learning Environments in Typical Education

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A Case Study on the Perceptions of Educators on the Penetration of Personal Learning Environments in Typical Education

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ABSTRACT

Personal Learning Environments (PLEs) help students manage and take control of their own learning. As such, the PLE promotes self-regulation in learning and allows learners to aggregate, manipulate and share digital artefacts within a flexible and versatile online space. This paper presents a case study in Greece, concerning an investigation about the penetration of PLEs in typical education. In particular, this case study aims at investigating the perceptions of educators about PLEs and their challenges in incorporating PLEs in their teaching practices. The findings are commented on the pros and cons of PLEs and the opportunities that they offer to the modern classroom. According to the results of the present research, most respondents are generally aware of the PLE concept and its advantages.

KEYWORDS

Greece, PLE, Schools, SRL, Students, Teachers

INTRODUCTION

Personal Learning Environments (PLEs) describe the tools, the communities and the services which are recommended by individual educational platforms and which are used by students, in order for them to direct their learning and pursue their learning goals (Castañeda, Dabbagh, & Torres-Kompen, 2017). PLEs, unlike Learning Management Systems (LMSs), tend to be student-centred. They facilitate learners to access, collect, manage and share the digital objects of their ongoing learning experiences. Instead of integrating different services into a centralised system, PLEs provide students with a variety of services and with control, in order for students to select and use these services in the way they consider appropriate (Chatti, Jarke, & Frosch-Wilke, 2007; Wilson, 2008; Kop & Fournier, 2014; Castañeda, Cosgrave, Marín, & Cronin, 2016).

The appearance of PLE has significantly facilitated the usage and the common use of open and reusable online learning resources. The PLE is more than ever the paradigm for supporting new learning models for the digital times according to Castañeda, Dabbagh, & Torres-Kompen (2017). Students can access, download, restructure and republish a great variety of learning materials via open-access services, which are provided in the cloud. Open Educational Resources (OERs) can be described as the "teaching, learning, and research resources that reside in the public domain or have

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been released under an intellectual property license that permits their free use or re-purposing by others, depending on the Creative Commons license in use" (Atkins, Brown, & Hammond, 2007).

Self-regulated learning is a substantial aspect of PLE, as it allows learners to become "meta-cognitively and behaviourally active and motivated participants in their own learning process" (Zimmerman, 1989). Although psycho-pedagogical theories about self-regulated learning date long before the arrival of the PLE, self-regulated learning is a significant feature of the latter. Self-regulated learning is activated in the PLE and is focused on connecting independent resources in a way that fulfils a particular learning goal. Following this example, self-regulated learning allows learners to regulate their learning; thus, learning outcomes are significantly increased (Steffens, 2006; Fruhmann, Nussbaumer, & Albert, 2010; Mikroyannidis, Connolly, & Law, 2012; Armakolas, Panagiotakopoulos, & Massara, 2015).

The present paper aims to research the perceptions of secondary education teachers who have obtained the A-level certification in the use and application of Information and Communication Technologies (ICT), regarding the following:

- How do teachers understand the concept of the PLE?
- How do they perceive the advantages and disadvantages of using a PLE?
- How does a PLE assist teachers and students and what potential does it have?
- How are teachers using PLEs in their everyday teaching?

In order to receive answers to the above questions, this paper presents the results of interviews conducted among secondary education active teachers in the prefecture of Achaia, Greece. In relation to the teachers' expertise, all the respondents were teachers of a particular expertise: 2 philologists, 2 biologists, 2 English language teachers, 2 physicists and 2 sociologists. The only criterion for the selection of the teachers was their 'A-level' certification in the use and application of ICT (basic ICT skills).

On the other hand, students in Greece have relatively low levels of access to computers compared to other countries. More positively, broadband provision and connectivity are almost universal because bandwidth is generally lower than the EU average. Despite the infrastructure obstacles, encouragingly high percentages of students are in schools where teachers and students frequently use ICT. Both teachers' and students' confidence in their ICT skills is below EU means, and professional development in ICT is patchy, as is the presence of an ICT coordinator in school (European Schoolnet and University of Liège, 2012).

The remainder of this paper is structured as follows. First, PLEs are introduced in conjunction with different e-learning methods and tools. Subsequently, the methodology we have used for collecting data and evaluating the results of the present investigation is presented. This is followed by a discussion on the results of the investigation and the key take-away messages. Finally, the paper is concluded and the next steps of this work are outlined.

LITERATURE REVIEW

Learners' Engagement

The PLE is founded on social media and is constantly gaining ground in the e-learning field as an effective teaching platform. Martindale and Dowdy (2010) mention that PLE are the outcome of the tools that the social media have offered to learners, enabling them to create, organise and share

content. PLEs are integrated in Web 2.0 tools, which are hosted in the cloud and in services that have been designed in order to help students collect and exchange resources, participate in the collective production of knowledge and manage the creation of their own meanings.

McGloughlin and Lee (2010) believe that PLEs reinforce students to take on their own learning and encourage them to select the means and the resources for the creation, the organisation and the content of their learning, so that they learn more effectively and efficiently. Rubin (2010) adds that PLEs are the inherently self-directed placing of responsibility for organising learning on the individual. These definitions and conceptual descriptions imply that PLEs can be viewed both as technology and as a pedagogical approach designed for the student, on the basis of each student's goals, or as a learning approach which "has been selected by a student so that it suits his or her personal learning style and rhythm" (Johnson, Adams, & Haywood, 2011, p. 8).

Contextual information on the learning process has been proven an important to support. This information stimulates the learners' engagement in and commitment to collaborating process (Beenen, Ling, Wang, Chang, Frankowsky, Resnick, & Kraut, 2004; Ling, Beenen, Ludford, Wang, Chang, Li, Cosley, Frankowski, Terveen, Rashid, Resnick, & Kraut, 2005; Rashid, Ling, Tassone, Resnick, & Riedl, 2006; Glahn, Specht, & Koper, 2007) and it supports thoughtful behaviour in navigation and on learning paths (Van Nimwegen, Van Oostendorp, Burgos, & Koper, 2006; Glahn, Specht, & Koper, 2007).

Learning Resources in a Flexible Framework

In the e-learning field, PLEs are becoming more and more effective in facing matters of learner control and personalisation, which are frequently absent from the institutional LMSs. Even though LMSs were originally designed to provide a flexible framework for advanced learning pedagogies, research has gradually shown that LMS emphasize faculty dissemination tools and not student learning tools, even if the latter are more likely to encourage student participation and interaction (Dabbagh & Kitsantas, 2012).

The type of PLE investigated in this paper consists of different widgets, which are micro-applications performing a dedicated task. The learner uses this particular selection of widgets in order to search for learning resources, as well as collaborate with other learners through videoconferencing and a shared writing pad (Mikroyannidis, Kroop, & Wolpers, 2015).

Despite the mounting evidence that social media are more and more supporting informal learning at home and in the community and that informal learning is becoming a vital element of the education of students of all ages, research has also revealed that PLE can help to integrate formal and informal learning in higher education contexts (McGloughlin & Lee, 2010).

Formal learning is described as the kind of learning which is offered by institutions or as highly structured learning, namely the one which takes place in classrooms and schools. Formal learning typically results in obtaining grades, degrees, diplomas and certificates. Informal learning is the one that is mainly put in the student's hands and is realised via observation, trial and error, looking for help, discussion with others, conversations, reflection on the events of a day, or is incited by students' general interests. Attwell (2007) suggests that PLE can be viewed as individuals that organise their learning in multiple contexts where informal learning can be used to complete formal learning, and adds that PLE play an important role in promoting the understanding of e-learning. While it seems that Web 2.0 technologies increase students' informal learning, PLE can be considered as a highly promising pedagogical approach for the intentional and deliberate completion of formal and informal learning.

In particular, a PLE consists of social tools, which enable students to acquire skills or knowledge, regardless of whether these tools allow students to interact with other students for the purposes of a school project, or to access the internet in order to find examples or suggestions on how to handle a project. A main feature of PLE is the fact that students develop an online ID, where the personalised learning environment provides data that inform students about what material they should share, what

material they shouldn't share, whom to select in order to share material and how to effectively merge formal and informal learning.

Findings have shown that students' beliefs on the potential of the PLE are dynamically changing, as they have navigated the course's background in social tools in order to construct and carry out learning activities, in accordance with researchers' functional definition of the potential of social tools. This has led researchers to suggest that a) students should be encouraged to develop skills and gain confidence by selecting, applying and using social media tools for personalised learning, and that b) new pedagogical approaches and models are required in order to enhance students' abilities to organise and adapt their own learning context and to promote their autonomy and self-knowledge in a PLE.

PLEs and Self-Regulated Learning

The teachers' perceptions of PLEs have not been sufficiently investigated in the literature. In a study conducted across several countries (Mikroyannidis et al., 2014), teachers expressed their perceptions about self-regulated learning and how PLEs can support self-regulated learning in formal education. The study indicated that teachers in different countries use a variety of instruments in order to motivate and support their students into achieving a high level of self-regulation. One of these instruments is educational technology and, more specifically, enabling students to personalise their learning environments.

In general, research shows that social media are being more and more used as tools for the development of formal and informal learning spaces or experiences which begin as a single learning platform or PLE, allowing the individual management of knowledge and construction, and are developed into a social learning platform or system where knowledge is socially mediated (McGloughlin & Lee, 2010; Johnson et al., 2011). Research also shows that using social media in higher education allows the creation of PLEs, which reinforce students by giving them a sense of personal representation in the learning process.

However, in order for students to successfully use the social media for the creation of a PLE, they need to acquire and apply a set of personal knowledge management skills, defined as "the act of managing one's personal knowledge via technology", which range from the creation, organisation and common use of digital content and of information, to higher class or more complicated personal knowledge management skills, such as consistency, the ability to balance formal and informal learning, critical thinking and creativity.

In particular, PLEs require the development and application of self-regulated learning skills because they are constructed "bottom to top", starting with personal goals, information management, as well as with the construction of individual knowledge, and proceeding to socially mediated knowledge and networked learning (Dabbagh & Kitsantas, 2012). Kitsantas and Dabbagh (2010) also, suggest that social media offer pedagogical possibilities which can contribute to the support and promotion of students' self-regulated learning, allowing the creation of PLEs, and that the relationship between PLEs and self-regulated learning is co-dependent and synergistic and requires the simultaneous, progressive and transformative development and application of self-regulated learning skills by using the social media.

METHODOLOGY OF DATA COLLECTION AND OF EVALUATION OF THE RESEARCH RESULTS

The present research is qualitative. Qualitative research mainly aims at the comprehension of the *meaning* of a phenomenon and not at its measurement and statistical analysis. The primary goal of qualitative research is to "research the meanings and representations that subjects attribute to social phenomena and procedures" and it "aims at describing, analysing, interpreting and comprehending social phenomena, situations and social groups' characteristics, mainly responding to *how* and *why* questions". When a research focuses on the study of *how* people experience a situation and of

which their beliefs are, when one researches a new field whose concepts have not been completely comprehended or when one evaluates if a new service or product are applicable, then they should use the qualitative approach methodology (Weinberg, 2002; Atkinson, Coffey, & Delamont, 2003; Merriam, 2009). Finally, the selection of the particular methodology was based on the fact that the researcher wished to obtain objective results, which could not be disputed, as would happen in the cases of ontology or phenomenology (Ritchie, Lewis, Nicholls, & Ormston, 2013; Gray, 2014). The qualitative research sample consisted of 10 adult secondary education teachers who have experience of PLEs.Semi-structured interview was the main tool of the qualitative research. The main characteristic of the semi-structured interview is that the researcher does not use highly structured questions. The researcher provides subjects with a stimulus and lets them freely express their thoughts and opinions. Moreover, the researcher barely intervenes in semi-structured interviews and when s/he does so, s/he aims to provide the subject with feedback or to make the subject focus on the topic under discussion, if s/he considers that the conversation has rambled. The interview is considered to be a significant means of collecting research material. According to Lichtman (2009), the main reason for which the interview is used in a research in education, is because it is believed that through the interpersonal communication that the interview requires, people are very likely to reveal many aspects of themselves.In the present research, as it was also mentioned above, the researchers briefly introduced and explained to each interviewee what is being researched, for which reasons it is being researched, how the communication between researchers and interviewees will take place, why the researchers consider that each interviewee's participation in the research is interesting, as well as by whom and how the collected information will be used. All interviews took place face-to-face, were conducted orally and were recorded on a tape recorder. At the end of each interview, the researchers encouraged the interviewees to listen to the tape-recording for the sake of accuracy, and to modify – if they wished to do so – any of their responses. None of the interviewees changed their responses. Subsequently, respondents' replies were transcribed, and coded on the basis of specific themes and analysed.

Results and Discussion

Analysing the demographic characteristics of the sample, we obtain the following information: seven respondents are males and three respondents are females. Regarding age, all the respondents are over 45 years of age. In particular, two respondents belong to the age group of 45-50 years of age, 6 respondents belong to the age group of 51-55 years of age and 2 respondents belong to the age group of 56-60 years of age.

Definition of the PLE

Most respondents (8 out of 10) were aware of the PLE concept and mentioned that it is an environment in which a student can learn by the use of different methods – either by using the computer or by using other resources. The above is in agreement with McGloughlin and Lee (2010), who believe that PLEs reinforce students to take on their own learning and encourage them to select the means and the resources for the creation, the organisation and the content of their learning, so that they learn more effectively and efficiently. Characteristically, one respondent mentioned that: "…the PLE is very interactive, offers substantial communication to the student, is pleasant…" Another respondent reported that the PLE is "…whatever offers cognitive stimuli; whatever generates interest; practically, all sorts of experiences…" Indicatively, one respondent defined the PLE as a student-centred model, which the student, under good guidance, can use via technology (students are better than teachers in using technology).

Regarding personalisation, it was mentioned that it is "…the ability to offer and adapt something to a person's needs, to a student's needs, in person or by distance-learning etc…" The above is consistent with Rubin (2010) according to whom the PLEs are the inherently self-directed placing of responsibility for organising learning on the individual

Another respondent reported that "…the PLE could be either real or virtual. It is an environment which explores students' existing knowledge as well as their interests, and in which students' knowledge will be developed. Namely, the PLE should consist of personalized learning…" A respondent mentions that: "…most students live in villages and work, and they do not have the required technical knowledge. Learning consists of what they learn at school and they are not involved in online projects. These are not the students who will be involved in e-learning…" Johnson, Adams, & Haywood (2011) agree with the above, based on whom the PLEs can be viewed both as technology and as a pedagogical approach designed for the student, on the basis of each student's goals, or as a learning approach which "has been selected by a student so that it suits his or her personal learning style and rhythm".

Moreover, another respondent defines the PLE as: "…an environment which is personalized to meet an individual's needs, a student's needs, an educated person's needs, in person or by distance-learning…"

Advantages of the PLE for Students

Regarding the advantages of the PLE, the respondents mentioned that one can better perceive a student's strengths and weaknesses, develop an interactive relationship with the student more easily and, through this relationship, improve his/her teaching manner, as s/he can adapt to the particular child's needs. Moreover, students adapt their free time according to their needs. At the same time, in a PLE, the students' space is also adapted, as students select their preferred learning space. Therefore, this is a more effective process in relation to the percentage of knowledge, which is absorbed during traditional teaching. Besides, according to Attwell (2007) PLE consists of social tools, which enable students to acquire skills or knowledge, regardless of whether these tools allow students to interact with other students for the purposes of a school project, or to access the internet in order to find examples or suggestions on how to handle a project.

In general, a PLE helps students to develop their special skills and aptitudes. Many times, it also enables students who do not have social skills, to develop these skills via the particular learning space and, at the same time, it provides teachers with the opportunity to function in a supportive framework for all student levels they may have in the classroom. Another advantage mentioned by the respondents is students' active participation. In such an environment, students act and set by themselves the goals they wish to achieve. The teacher's role is supportive. Other advantages of the use of a PLE are critical thinking, abstract thinking, cooperation and mutual aid. Also, Attwell (2007) believes that students should be encouraged to develop skills and gain confidence by selecting, applying and using social media tools for personalised learning, and that new pedagogical approaches and models are required in order to enhance students' abilities to organise and adapt their own learning context and to promote their autonomy and self-knowledge in a PLE.

Disadvantages of the PLE for Students

With regards to the disadvantages of the PLE, respondents claimed that students do not have the opportunity to listen to other children's queries and concerns, and that there is no competition in order for students to explore a competitive environment. This means that there is no interaction or group work and that, as a result, students do not develop their social skills. According to one respondent, there are students who have very strong cognitive and learning skills and who cannot function as members of a team.

However, this claim contradicts the PLE literature; for example, according to Downes (2012), a PLE is a hub in a content network, which is connected to other hubs, and the content of the creation services is used by other students. In this way, a personal learning centre is created, in which the content is reused according to each student's needs and interests. Moreover, it seems that although teachers are quite aware of the PLE concept in a theoretical level, there is some doubt about the creation of a PLE. The reasons which cause this doubt may need to be further explored.

According to another respondent, the main disadvantage is the goal-setting procedure, which is followed by children. Children do set goals, but they need to learn to cooperate in order to be able to achieve these goals. Again, this view contradicts the literature, since the PLE also considers a selection of social aspects of informal learning because this often plays a key role within a community of learners (Lane, 2008). These groups may have similar backgrounds or goals, so that a PLE can be used to support them throughout their learning process (Nussbaumer, Dahn, Kroop et al., 2015).

Advantages of the PLE for Teachers

According to the respondents, a PLE is dynamic for teachers because it addresses a single student's special characteristics and not many students' such characteristics. These characteristics can be turned into potential with learning benefits. According to other respondents, in a PLE, people can shape their learning path by themselves, nothing is imposed to them and, therefore, everyone is responsible for their actions. Moreover, learning outcomes are better and students are more active. Furthermore, a PLE enables teachers to be fully informed on their subject, so that they can tell students more things than those they read in the books, which are provided by the Ministry of Education. One respondent reported that the PLE helps him because he learns a lot from the students. Teachers do have knowledge but, today, children's thoughts are fertile and this can be seen mainly through programmes such as Comenius and Erasmus, where students' thoughts and concerns are shown.

Possibilities offered by the PLE

With regards to the possibilities that are offered by the PLE, most respondents mentioned that it raises the standards in the educational level, since learning can be adapted to a student's level and the learning pace can be proportional to each student's level. Other respondents mention that one of the possibilities, which are offered by a PLE, is the possibility to absorb a chunk or a sum of knowledge more quickly. In general, most respondents emphasized that, on the one hand, a PLE offers graded teaching and, on the other hand, it provides the teacher with more preparation time, by separately focusing on each child's needs. Moreover, it offers possibilities of communication, contact and exchange of thoughts and ideas. According to McGloughlin & Lee (2010) despite the mounting evidence that social media are more and more supporting informal learning at home and in the community and that informal learning is becoming a vital element of the education of students of all ages, research has also revealed that PLE can help to integrate formal and informal learning in higher education contexts.

Concerning the ways of improving PLEs, respondents propose to increase the use of new technologies. They indicate that we should mainly change our attitude in a high degree. Moreover, they mention that PLEs should become more attractive. Furthermore, they point out the need for training in PLEs via training seminars, in order for PLE to become more well-known, to spread and, therefore, to be more and more used. One respondent mentions that PLEs should be part of a school platform, such as "my school", and that they should be attractive to students as well as easy to use. Moreover, other ways of improving PLEs concern infrastructure, educational cooperation among schools, separate spaces and libraries for children.

Commenting on Findings

The themes that emerged were: a) definition of the PLE, b) advantages of the PLE for students, c) disadvantages of the PLE for students, d) advantages of the PLE for teachers, e) possibilities offered by the PLE. According to the results of the present research, most respondents are generally aware of the PLE concept and its advantages. However, the perceptions of educators about the disadvantages of the PLE differ significantly from the literature, as they seem to be unaware of the social and goal-setting aspects of the PLE. Additionally, the respondents did not seem familiar with the technologies that can be used to realise a PLE. In particular, seven out of ten respondents reported that have not created their own PLE. Two out of the three teachers who reported that they have created a PLE,

mentioned that they have created a blog and a website and that they communicate with their students via these tools, even though they believe that it is a difficult procedure, especially when it comes to minor students. Moreover, the third respondent referred to the Moodle platform as a PLE.

The fact that the sample of respondents exclusively consisted of trained and certified educators, poses certain questions about the training that they have received and especially if it is thorough enough to provide them an in-depth knowledge of the PLE. Based on the respondents' perceptions of the PLE as reported in this investigation, we can identify certain gaps in the training that they have received, particularly regarding the social and technological aspects of the PLE. It is therefore important that the training offered to educators is improved in order to address these overlooked aspects.

It is also important to note that the majority of respondents have not had the opportunity to apply PLEs in their teaching practices. When further probed about this, some respondents mentioned the non-flexible national curriculum as the main obstacle behind being able to introduce PLEs in their teaching. Another take-away message from this investigation is thus the need for a curriculum flexible enough to allow personalised and self-regulated learning. In combination with effective training, this would enable educators to introduce PLEs to their students and promote personalised and self-regulated learning in their everyday teaching.

CONCLUSION AND FURTHER WORK

This paper presented an investigation about the penetration of PLEs in typical education in Greece. In particular, this investigation was focused on the perceptions of educators about PLEs, as well as the challenges educators in incorporating PLEs in their teaching practices. This investigation revealed certain gaps in the training received by educators regarding the social and technological aspects of PLEs, as well as the need to update and adapt the national curriculum so that personalised and self-regulated learning can be promoted in typical education. Although the present investigation was focused in the context of typical education in Greece, its methodology can inform similar studies that can be conducted in other cultural and educational contexts in order to investigate the penetration of PLEs in typical education. Formal education provides a clear example of a constraint that creates space for educators. However, to understand its dynamics is to understand that such constraints need not only be produced in this way. The conditions for friendship, peer mentoring, collaborative inquiry and social movements are clearly not bounded by formal education (Johnson, Prescott, & Lyon, 2017). Lifelong learning in informal education can help at this level much further than formal education.

The present research describes PLEs from the side of the teacher. The findings are commented on the pros and cons of PLEs and the opportunities that they offer to the modern classroom. The results highlight the dominant teacher's role in modern education. Our next steps in continuing this research will be focused on the use and exploitation of PLEs within a follow-up survey targeting educators from different levels of informal education based in teacher training programmes. We will thus acquire a better insight into the educators' perceptions of personalised learning and their challenges in becoming self-regulated learners.

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